Claims:

1   1.   A method of operating a base station to transmit communications to a

2   plurality of user terminals on a plurality of carriers, the method comprising:

3   for each of the plurality of carriers, receiving channel quality indications from the

4   plurality of user terminals;

5   based upon the channel quality indications received from the plurality of user

6   terminals, for each of the plurality of carriers, determining a maximum data rate supportable

7   for each of the user terminals;

8   based upon the maximum data rate supportable for each of the user terminals for

9   each of the plurality of carriers, and a minimum quality of service required for each user

10   terminal, allocating frames in a subsequent communication to the plurality of user terminals;

11   and

12   transmitting the subsequent communication to the plurality of user terminals based

13   upon the allocation of frames.

1   2.   The method of claim 1, further comprising allocating the plurality of frames

2   to the plurality of user terminals in order to maximize throughput based upon the constraints

3   of service criteria.

1   3.   The method of claim 2, wherein the service criteria are based upon user

2   terminal subscription levels.

1   4.   The method of claim 2, wherein the service criteria is based upon fairness in

2   resource allocation.

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1   5.   The method of claim 1, wherein the subsequent communication includes

2   both voice communications and data communications.

1   6.   The method of claim 1, wherein the base station transmits voice

2   communications and the data communications on separate carriers.

1   7.   The method of claim 5, wherein successive packets of a data communication

2   are carried on separate carriers.

1   8.   The method of claim 5, wherein successive packets of a voice

2   communication are carried on separate carriers.

1   9.   The method of claim 1, wherein:

2   the subsequent communication includes a packet that includes a plurality of frames

3   and that is transmitted on one carrier of the plurality of carriers; and

4   the packet includes a preamble that indicates the contents of the packet.

1   10.   The method of claim 9, wherein the base station transmits packets at a

2   frequency that meets a voice communication rate requirement.

1   11.   The method of claim 9, further comprising coding the packet with a plurality

2   of Walsh codes prior to its transmission.

1   12.   The method of claim 9, wherein the packet supports both voice

2   communications and data communications.

1   13.   The method of claim 9, wherein the packet includes a plurality of frames and

2   each frame includes:

3   a pilot signal; and

4   a plurality of reverse link power control bits intended for the plurality of user

5   terminals.

1   14.   The method of claim 9, wherein the preamble further indicates that the

2   packet carries a voice communication.

1   15.   The method of claim 9, wherein the preamble further indicates that the

2   packet carries a data communication.

1   16.   The method of claim 9, wherein:

2   the preamble includes a user identifier field; and

3   the user identifier field identifies one or more user terminals for which the packet is

4   intended.

1   17.   The method of claim 9, wherein:

2   the preamble includes an explicit data rate indicator;

3   the explicit data rate indicator indicates a data rate of the packet; and

4   an identifier that identifies one or more user terminals for which the packet is

5   intended.

1   18.   The method of claim 1, further comprising assigning communications for a

2   particular user terminal on a carrier having a best channel quality indication.

1   19.   The method of claim 1, wherein the subsequent transmission is a superframe

2 that support both voice communications and data communications, and the method further

3 comprises:

4   encoding the data communications of the superframe using a first coding algorithm;

5 and

6   encoding the voice communications of the superframe using a second coding

7 algorithm that is different from the first coding algorithm.

1   20.   The method of claim 1, wherein superframes are transmitted on the plurality

2 of carriers and are synchronized in time.

1   21.   A method of operating a user terminal within a wireless communication

2 system to receive communications on a plurality of carriers, the method comprising:

3   receiving a plurality of pilot signals, wherein each pilot signal corresponds to a

4 carrier of the plurality of carriers;

5   determining a plurality of channel quality indications, wherein each channel quality

6 indication corresponds to one of the plurality of carriers;

7   reporting the plurality of channel quality indications to a serving base station; and

8   receiving a communication on at least one of the carriers that satisfies a minimum

9 quality of service required for the user terminal.

1   22.   The method of claim 21, wherein the communication includes both a voice

2 communication and a data communication.

1   23.   The method of claim 22, wherein the voice communication and the data

2   communication are received on separate carriers.

1   24.   The method of claim 22, wherein the voice communication and the data

2   communication are received on a common carrier.

1   25.   The method of claim 21, further comprising decoding the packet with a

2   plurality of Walsh codes.

1   26.   The method of claim 21, wherein:

2   the communication is received in a packet that includes a plurality of frames and that

3   is transmitted on one carrier of the plurality of carriers; and

4   the packet includes a preamble that indicates the contents of the packet.

1   27.   The method of claim 26, wherein:

2   data communications received in the packet are encoded using a first coding

3   algorithm; and

4   voice communications received in the packet are encoded using a second coding

5   algorithm that is different from the first coding algorithm.

1   28.   The method of claim 21, further comprising receiving communications on a

2   carrier having a best channel quality.

1   29.   A base station that transmits communications to a plurality of user terminals

2   on a plurality of carriers, the base station comprising:

3   an antenna;

4   a Radio Frequency unit coupled to the antenna; and

5   at least one digital processor coupled to the Radio Frequency unit that executes

6   software instructions causing the base station to:

7   for each of the plurality of carriers, receive channel quality indications from the

8   plurality of user terminals;

9   based upon the channel quality indications received from the plurality of user

10   terminals, for each of the plurality of carriers, determine a maximum data rate supportable

11   for each of the user terminals;

12   based upon the maximum data rate supportable for each of the user terminals for

13   each of the plurality of carriers, and a minimum quality of service required for each user

14   terminal, allocate frames in a subsequent communication to the plurality of user terminals;

15   and

16   transmit the subsequent communication to the plurality of user terminals based upon

17   the allocation of frames.

1   30.   A user terminal that operates to wirelessly receive communications on a

2   plurality of carriers, the user terminal comprising:

3   an antenna;

4   a Radio Frequency unit coupled to the antenna; and

5   a digital processor coupled to the Radio Frequency unit that executes software

6   instructions causing the user terminal to:

7   receive a plurality of pilot signals, wherein each pilot signal corresponds to a carrier

8   of the plurality of carriers;

9   determine a plurality of channel quality indications, wherein each channel quality

10   indication corresponds to one of the plurality of carriers;

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11   report the plurality of channel quality indications to a serving base station; and

12   receive a communication on at least one of the carriers that satisfies a minimum

13   quality of service required for the user terminal.

1   31.   A plurality of software instructions stored on a media that, upon execution by

2   a base station, cause the base station to transmit communications to a plurality of user

3   terminals on a plurality of carriers, the plurality of software instructions comprising:

4   a set of instructions executed by the base station that cause the base station to, for

5   each of the plurality of carriers, receive channel quality indications from the plurality of user

6   terminals;

7   a set of instructions executed by the base station that cause the base station to, based

8   upon the channel quality indications received from the plurality of user terminals, for each

9   of the plurality of carriers, determine a maximum data rate supportable for each of the user

10   terminals;

11   a set of instructions executed by the base station that cause the base station to, based

12   upon the maximum data rate supportable for each of the user terminals for each of the

13   plurality of carriers, and a minimum quality of service required for each user terminal,

14   allocate frames in a subsequent communication to the plurality of user terminals; and

15   a set of instructions executed by the base station that cause the base station to,

16   transmit the subsequent communication to the plurality of user terminals based upon the

17   allocation of frames.

1   32.   A plurality of software instructions stored on a media that, upon execution by

2   a user terminal, cause the user terminal to wirelessly receive communications on a plurality

3   of carriers, the plurality of software instructions comprising:

4   a set of instructions executed by the user terminal that cause the user terminal to

5   receive a plurality of pilot signals, wherein each pilot signal corresponds to a carrier of the

6   plurality of carriers;

7   a set of instructions executed by the user terminal that cause the user terminal to

8   determine a plurality of channel quality indications, wherein each channel quality indication

9   corresponds to one of the plurality of carriers;

10   a set of instructions executed by the user terminal that cause the user terminal to

11   report the plurality of channel quality indications to a serving base station; and

12   a set of instructions executed by the user terminal that cause the user terminal to

13   receive a communication on at least one of the carriers that satisfies a minimum quality of

14   service required for the user terminal.